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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,289	09/18/2006	Hiromoto Ohno	Q81383	8452

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EXAMINER

LAO, MARIALOUISA

ART UNIT	PAPER NUMBER
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1621

MAIL DATE	DELIVERY MODE
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12/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,289	Applicant(s) OHNO, HIROMOTO	
	Examiner M. Louisa Lao	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/18/06</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US7138553, US'553).

4. The instant claims (claims 1-6) are drawn to a method for the purification of 1,1-dichloroethane, comprising *inter alia* bringing 1,1-dichloroethane containing a compound having a nitro group and/or a hydroxyl group as a stabilizer into contact with zeolite having an average pore size of 3.4 to 11 angstrom and/or a carbonaceous absorbent having an average pore size of 3.4 to 11 angstrom in a liquid phase to reduce the stabilizer (like phenol, cresol, aminomethyphenol) to 30ppm or less. The instant claims (claims 7-13) are drawn to a process for the production of 1,1-difluoroethane comprising *inter alia* the steps of using said purification method; reacting the 1,1-dichloroethane reduced in said purification method with HF in the

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presence of a catalyst (like Cu, Mg, Cr) at reaction temperature of 100-350°C to produce 1,1-difluoroethane and separating desired product from unused materials, the latter are recycled back for re-use.

5. US`553 in column 1 lines 51-53 teaches the method of making pentafluoroethane by reacting tetrachloroethylene with HF in the presence of a fluorination catalyst (like trivalent chromium oxide, column 8 line 36) at reaction temperature of 330°C. US`553 teaches that the starting material contains a stabilizer that needs to be reduced to desirably 30ppm or less (column 6 lines 15-20), since the stabilizer (like phenol, cresol, aminomethyphenol- column 6 lines 11-12) is deleterious to the catalyst activity (column 2 line 8). US`553 teaches in column 5 lines 17-60, the zeolite and/or carbonaceous sieves, and the desired pore size and properties, used as adsorbents for the stabilizer removal. US`553 teaches in column 4 middle, the step-wise sequence by which the pentafluoroethane is made from the tetrachloroethylene. US`553 exemplifies this process in working examples in columns 11-18. US`553 teaches that the product is separated from the unreacted materials, where the latter are re-used and recycled (column 19 lines 14-15).

6. The instant claims differ from US`553, first a) in that US`553 teaches the process of making pentafluoroethylene from halogenated alkenes and/or halogenated alkanes, as exemplified by tetrachloroethylene; and second, b) in that US`553 teaches that said tetrachloroethylene contains a compound having a nitro group and/or a hydroxyl group as a stabilizer, is passed through a molecular sieve adsorbent to reduce the amount of stabilizer therein.

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7. The first difference is not patentable because it would have been obvious, at the time that Applicant's invention was made, to one of ordinary skill in the art to have selected equivalent halogenated alkene and/or halogenated alkane, since halogenated alkenes and/or halogenated alkanes are within the same halogenated family and can function as precursors to make a hydrofluorocarbons (HFCs) (see column 6 lines 63-65).

8. An artisan of ordinary skill in the art would have been motivated to use a halogenated alkane, like 1,1-dichloroethane, in the process of making HFC's taught by US'553, which uses tetrachloroethylene, with a reasonable expectation of success to have precursors suitable for HFC production.

9. The second difference is not patentable because it would have been obvious, at the time that Applicant's invention was made, to one of ordinary skill in the art to have selected equivalent halogenated alkene and/or halogenated alkane, which contains a stabilizer. The instant process uses a halogenated alkane (1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer; while US'553 teaches a halogenated alkene (tetrachloroethylene), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer. The artisan of ordinary skill in the art would have found by inference that the reduction or removal of a compound having a nitro group and/or a hydroxyl group as a stabilizer by passing through a molecular sieve adsorbent can be effectuated with an equivalent halogenated alkane (1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer.

10. An artisan of ordinary skill in the art would have been motivated to use a halogenated alkane, like 1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl

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group as a stabilizer in the process of purification taught by US'553, which uses tetrachloroethylene, halogenated alkane (1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer with a reasonable expectation of success that said stabilizer will be reduced to the desired level.

All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to have yielded predictable results to one of ordinary skill in the art at the time of the invention.

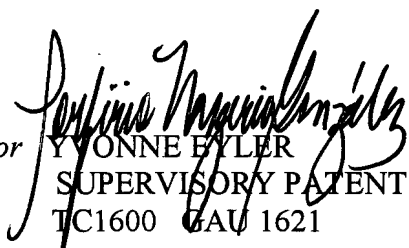
In applying known technique to a known device (method, or product) ready for improvement to yield predictable results, the claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art.

11. No claims are allowed.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MLouisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ml111122007
MLouisa Lao
Examiner
Art Unit 1621

for 
YVONNE EYLER
SUPERVISORY PATENT EXAMINER
TC1600 GAU 1621